

REMARKS

Claims 1-3 were pending, and all of the claims were rejected in the present Office Action. The drawings were objected to. Claim 1 has been amended, Claims 2 and 3 cancelled and new Claim 4 introduced. The drawings have been amended. The specification has been amended to incorporate a claim of priority to a foreign patent which has previously been asserted and acknowledged. No new matter has been introduced. In view of the amendments and the remarks presented below, the Applicant respectfully submits that the objections and rejections have been overcome and that the claims are in condition for allowance.

Objections to Drawings

The Examiner objected to the drawings because the sectional views were not properly crosshatched. Corrected drawings are supplied herewith, and the Applicant respectfully submits that the objections have been obviated.

Claim Rejections

35 U.S.C. § 102

Claims 1 and 2 were rejected under 35 U.S.C. § 102 (b) as being anticipated by Brown et al. (US 6,075,711; "Brown"). The Applicant has incorporated the subject matter of Claims 2 and 3 into Claim 1, canceling Claims 2 and 3. The Applicant respectfully submits that this amendment has overcome the rejection based on Brown as Brown was not applied to the subject matter of Claim 3.

35 U.S.C. § 103(a)

Claim 3 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Brown in view of Huang et al. (US 6,410,861; "Huang"). The subject matter of now cancelled Claim 3 has been incorporated into Claim 1. The Examiner accepts that Brown does not specifically state that the wall of the hole has recesses that receive the corresponding solder balls and have electrical conductors applied to the walls of the recesses, and relies on Huang to remedy this deficiency. The Applicant respectfully submits that the Examiner has not made out a *prima facie* case of obviousness.

The Examiner asserts that Huang teaches providing conductive recesses 30 along the periphery of an IC mounting area for the purpose of receiving solder balls. However Huang specifically describes the structure 30 as a mating support area and differentiates it from the mating electrical interconnect areas 31 (Huang, col. 2, line 52-54). Thus, the structure relied upon is a mechanical structure, whereas the electrical connections are provided by other structures.

Further, the modification of the teachings of Brown to incorporate the teachings of Huang would result in an inoperative device, and an inoperative combination cannot be used to make out a *prima facie* case of obviousness.

Huang teaches that the solder balls 36 have a melting temperature of approximately 310° C and that the solder paste used to make the electrical connections has a melting temperature of approximately 220° C. As shown in Fig 2 of Huang, the structural support is provided by the solder balls 30, which do not serve as electrical connections, whereas in Brown, the solder balls 21 which make the electrical connection to the IC 10 also provide physical support. Prior to the melting of the mechanical connection solder balls 30, the electrical connection solder balls 21 in Brown would be melted and the IC may shift or separate from the circuit board. The Examiner has not suggested how this problem can be overcome.

In order to make a case of *prima facie* obviousness, it must at least be shown that the reference can be modified in accordance with the suggestion in another reference or in accordance with the skill of an ordinary practitioner in the art and that the resultant combination must also be operable. Since the Examiner has not shown how the manufacturing problems are overcome, the modification is not operable, and there is no suggestion or motivation to make the modification suggested by the Examiner. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

New Claims

New Claim 4 has been presented to further describe the subject matter to which the Applicant is entitled.

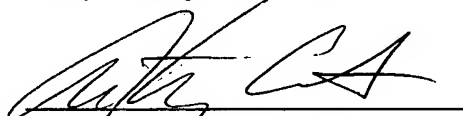
Conclusion

Claim 1 has been amended; Claims 2 and 3 have been cancelled; and new Claim 4 has been presented. Claims 1 and 4 are pending after entry of this amendment.

For at least the reasons presented above, the Applicant respectfully submits that the pending claims are in condition for allowance.

The Examiner is respectfully requested to contact the undersigned in the event that a telephone interview would expedite consideration of the application.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Anthony P. Curtis', is written over a horizontal line.

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In the Drawings:

Attached are revised drawing sheets 1 and 2, containing amendments to Fig. 1 and Fig. 3.